



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/681,481

10/08/2003

Paul A. Farrar

1303.112US1

7468

21186 7590 01/22/2007

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

P.O. BOX 2938

MINNEAPOLIS, MN 55402

EXAMINER

KORNAKOV, MICHAIL

ART UNIT

PAPER NUMBER

1746

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
----------------------------------------	-----------	---------------

3 MONTHS

01/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/681,481	Applicant(s) FARRAR, PAUL A.	
	Examiner Michael Kornakov	Art Unit 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 41-46 is/are pending in the application.
- 4a) Of the above claim(s) 3,4,6,8,13,15,19,21,26-29 and 45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,7,9-12,14,16-18,20,22-25,41-44 and 46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>03/22/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-29, 41-46 in the reply filed on 11/13/2006 is acknowledged. Claims 30-40 and 47-50 are cancelled. Applicant's reply regarding election of species is not found responsive, since Applicant did not elect species according to the requirement of the previous office action. A telephone call was made to Applicant's representative, Mr. D. Peterson, esq., on 01/10/2007 to clarify the election of species. Mr. Peterson has confirmed election of carbon dioxide as supercritical fluid; de-ionized water as a carrier fluid; sonic energy as supplemental mechanical energy; chlorofluorocarbon as the carrier fluid. Claims readable on elected species are 2, 5, 7, 12, 14, 18, 20, 28, 44. Claims 3, 4, 6, 8, 13, 15, 19, 21, 26-29, 45 are withdrawn from consideration as being directed to non-elected inventions. Claims 1, 2, 5, 7, 9-12, 14, 16-18, 20, 22-25, 41-44, 46 are examined on the merits.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Claim 10 recites that "**changing a thermodynamic condition** includes changing **both** a pressure and temperature of the supercritical fluid", which apparently is not disclosed by the instant specification and therefore appropriate correction is required.

Art Unit: 1746

Claim Objections

3. Claim 44 is objected to because of the following informalities: claim 44 recites "clorocarbon". Apparently, chlorocarbon should be written. Appropriate correction is required.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1, 5, 11, 12, 16, 18, 41 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 12, 17, 18 of copending Application No. 11/458,863. Although the conflicting claims are not identical, they are not patentably distinct from each other because they represent

Art Unit: 1746

similar processing steps and recite the use of similar or even identical processing parameters.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 5, 7, 9-12, 14, 16-18, 20, 22-24, 41, 42,46 are rejected under 35 U.S.C. 102(b) as being anticipated by Jackson et al (U.S. 5,013,366).

Jackson teaches cleaning contaminated substrate (col.7, lines 3-5) comprising suspending substrate in a liquid suspension medium (reads on “a carrier fluid”, as claimed), such as deionized water; forming a supercritical fluid in contact with the substrate (col.2, lines 36-41; col.3, lines 36-65) and shifting the phase of the fluid (reads on “changing a thermodynamic condition of the supercritical fluid), thus forming gas bubbles in the liquid suspension medium (col.4, lines 10-13; paragraph, bridging col.10 and col.11). The supercritical fluid can be formed from carbon dioxide (col.3, lines 65-67). With regard to claims 9 and 10, see col. 8, lines 10-20, wherein shifting the phase of the fluid is achieved by changing both a pressure and temperature of the supercritical

Art Unit: 1746

fluid. Jackson also teaches the use of mechanical energy, such as sonic energy to enhance cleaning action (col.11, lines 36-40).

Therefore, all the processing steps as instantly claimed are met by Jackson.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al (U.S. 5,013,366).

While providing for the use of sonic energy to enhance the cleaning action, Jackson does not specifically indicate the use of megasonic wave energy. However, Jackson teaches that high energy sonic bursts agitate the substrate to promote the breaking of bonds between the contaminants and the substrate being cleaned (paragraph, bridging col. 11 and 12). Since the use of megasonic waves is well known

Art Unit: 1746

in the art (see, for example U.S. 5,456,759 to Stanford) and since Jakson provides motivation to apply high energy sonic bursts, one skilled in the art would have found obvious to utilize megasonic waves while cleaning the substrate in the teaching of Jackson with the reasonable expectation of success.

11. Claims 43, 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al (U.S. 5,013,366) in view of Tipton et al (U.S. 6,800,142).

While teaching the use of suspension medium to enhance removal of contaminants from the substrate and specifically indicating removal of photoresist by described cleaning technique, Jackson does not specifically indicate the use of halogenated hydrocarbon fluid and particularly a chlorocarbon solvent as a suspension medium. However, the use of chlorocarbon in combination with densified/supercritical fluid for processing substrate is known in the art and particularly used to enhance removal of photoresist residues from substrate. Thus, Tipton teaches a process wherein removal of photoresist residues is enhanced by using a chlorocarbon solvent in combination with the densified fluid (col. 4, lines 25-31). Therefore, one skilled in the art motivated by Tipton would have found obvious to utilize a chlorocarbon solvent as suspension medium in order to enhance removal of photoresist in the method of Jackson with the reasonable expectation of success.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

Art Unit: 1746

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M. Kornakov

Michael Kornakov
Primary Examiner
Art Unit 1746

01/17/2007